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Translation

PCT/EP2003/014820

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 27483P WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/014820	International filing date (*day/month/year*) 23 December 2003 (23.12.2003)	Priority date (*day/month/year*) 23 December 2002 (23.12.2002)
International Patent Classification (IPC) or national classification and IPC G01N 33/53		
Applicant FEBIT BIOTECH GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand 01 March 2004 (01.03.2004)	Date of completion of this report 03 March 2005 (03.03.2005)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/014820

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages _____ 1-15 _____, as originally filed
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages _____ 1-17 _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the drawings:

pages _____ 1/9-9/9 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-17	YES
	Claims		NO
Inventive step (IS)	Claims	1-17	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-17	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

D1: WO 00/13018 A (FEBIT FERRARIUS BIOTECHNOLOGY; LINDNER HANS (DE); MUELLER MANFRED (DE)) 9 March 2000 (2000-03-09)

D2: WO 02/089971 A (BEIER MARKUS; FEBIT AG (DE); MAURITZ RALF (DE); STAEHLER CORD F (DE)) 14 November 2002 (2002-11-14)

D3: US-A-5 616 467 (OLSEN EGIL ET AL) 1 April 1997 (1997-04-01)

D4: WO 02/32567 A (GUEIMIL RAMON; FEBIT AG (DE); HEIDBREDE ANKE (DE); STAEHLER CORD F (D)) 25 April 2002 (2002-04-25).

Document D1 describes a method for the production of a support for determining analytes, wherein a microfluidic support with channels is used and a plurality of different receptor components (hybridization probes) is immobilized in a place- and/or time-specific manner, particularly by exposure to light.

According to the method for determining analytes, the support is brought into contact with a sample containing analytes and the analytes are determined by nucleic acid

hybridization, a plurality of hybridization probes, which each specifically bind with different analytes present in the sample, being arranged in different areas of the support.

Like document D1, document D2 also concerns a method for the production of a microfluidic support for the determination of analytes. The synthesis of the receptor components comprises the use of a combination of photochemical and wet chemical steps.

None of the available documents contains the deposition of hapten groups on the support used for the production of receptors. According to the present application, receptor synthesis is followed by staining of the support surface by the specific binding partner of the hapten group. In areas in which a receptor synthesis has been successful, staining by the binding partner is not possible (negative signal). This negative signal increases in intensity with the length of the receptor. The length of the receptor, that is to say, the success of the synthesis, can be detected by an increasing negative signal.

In the application, a universal detection of any number of different sequences is possible by a hapten detection reagent instead of through the control hybridization known from the prior art (see documents D1 to D4), which assumes knowledge of the composed receptor sequences. The method according to claims 1-2, 4-13 and 15-17 is suitable for controlling the quality of a receptor synthesis since the detection of the probe length and hence also the efficiency of the synthesis occurring at that position can be carried out universally, independently of a sequence, using a hapten detection reagent.

According to claims 3 and 14 the hapten groups are introduced into the receptors synthesized on the support in one or more positions. This method makes it possible to control the efficiency of the receptor synthesis on the basis of the number of hapten groups introduced into an area. Following receptor synthesis and contact with a hapten detection reagent, positive signals are produced. The intensity distribution of the signal correlates with the length of the receptor molecules. Even without hybridization the success of receptor synthesis can be verified directly after synthesis.

Consequently, claims 1-17 meet the requirements of PCT Article 33(2) and (3).

The applicant's attention is drawn to the fact that the spacers B and C specified in figure 6 (pages 8 and 9) do not correspond to the spacers described on page 13 and that this should be corrected (PCT Article 6).